



ANALYSIS OF LEVATOR FUNCTION AND SEVERITY OF CONGENITAL PTOSIS IN KASHMIRI POPULATION: AN OBSERVATIONAL STUDY

Ophthalmology

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ABSTRACT

Purpose: To report the grading of ptosis and levator function in patients with congenital ptosis. **Design:** Prospective observational. **Material And Method:** A prospective observational single institutional study was conducted on 37 eyes of 35 patients having Congenital Ptosis. The severity of ptosis and grading of levator function was determined using Marginal Reflex Distance 1 and Berkes method for Levator function. **Results:** The study revealed that 54.15% (20) had severe ptosis, 29.7% (11) of patients had moderate ptosis while only 16.2% (06) of patients had mild ptosis. The levator function was poor in 59.5% (22) while 24.3% (09) had fair levator function. The good levator function was seen in only 16.2% (06) of patients. **Conclusion:** The majority of congenital ptosis patients have a severe type of ptosis with poor levator function. The grading of ptosis, the levator function, and the risk of amblyopia are the parameters that will guide the timing and the choice of the surgical technique.

KEYWORDS

Levator function, Ptosis, MRD1

INTRODUCTION

Blepharoptosis or ptosis, as it is more commonly known, is a rare condition that may affect individuals of all ages ranging from neonates to elderly individuals. Ptosis refers to a drooping or inferior displacement of the upper eyelid with associated narrowing of the vertical palpebral fissure. The drooping may be slight or insignificant; however, in a few patients, it might be severe in that the pupils are completely covered causing visual disturbances. This disorder is caused by a dysfunction of the muscles and/or nerves that regulate elevation of the eyelid.

Ptosis may show several presentations. It may be familial or sporadic, acute or chronic, unilateral or bilateral, progressive or non-progressive, may manifest as an isolated sign or occur in association with other ocular anomalies and/or other systemic disorders of varying severity, and congenital (when noticed at birth or during the first year of life) or acquired often associated with neuromuscular disorders.

The purpose of the study is to report the grading of ptosis and levator function in patients with congenital ptosis in a Kashmiri population

MATERIAL AND METHOD

A Prospective Observational single institutional study was conducted, in the Post Graduate Department of Ophthalmology, Government Medical College, Srinagar. In this study, 35 patients (37 eyes) were included, among which 18 were females and 17 were males. After obtaining the ethical clearance from the institutional ethical committee the study was conducted for the period of 02 years (Jan. 2018 to Jan 2020). Patients of all ages and both sexes having congenital ptosis were included, whereas, patients of acquired ptosis were excluded from the study.

Patients with congenital ptosis were diagnosed clinically based on history, old photographs, and clinical signs. General examination and detailed ocular examination were done. Visual acuity was measured by Snellen testing. Ptosis evaluation was done with special emphasis on the lid measurements such as Palpebral Fissure Height (PFH), Marginal Reflex Distance 1 (MRD1), Marginal Reflex Distance 2 (MRD2), Marginal Limbal Distance (MLD), Marginal Crease Distance (MCD), and Levator Function (LF). Associated features such as Bell's phenomenon, jaw winking, corneal sensitivity status, and evidence of any pre-existing inflammatory, infectious or neoplastic lesion of the eyelids was noted.

Levator function was classified by Berke's Method as:

- Good, if it is 8mm or more
- Fair, if it is from 5 to 7mm, and
- Poor, if it is 4mm or less

In children, the levator function is

- Good, if the lid flings back to its original position after the

examiner everts it.

- Poor, if the lid fails to fling back to its original position after the eversion.

Ptosis was graded as:

- Mild ptosis-drooping of lid 2mm or less from the normal position.
- Moderate ptosis -drooping of lid 3mm from the normal position.
- Severe ptosis -drooping of lid equal to or more than 4mm from the normal position.

The recorded data was compiled and entered in a spreadsheet (Microsoft Excel) and then exported to the data editor of SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA)

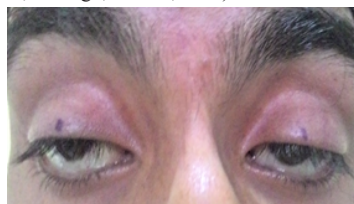


Figure 1: Bilateral severe ptosis with poor levator function

Table 1: Grading of congenital ptosis patients

Grading of ptosis	Frequency	Percentage
Mild (2mm ptosis)	06	16.2
Moderate (3mm ptosis)	11	29.7
Severe (4mm ptosis)	20	54.1
Total	37	100

RESULTS

The study was conducted on 37 eyes of 35 patients and revealed the following results:

From Table 1, the study revealed that most of the patients belonged to the Severe ptosis group including 54.15% (20) of patients. The Moderate ptosis included 29.7% (29.7) of patients while only 16.2% (06) of patients had mild ptosis.

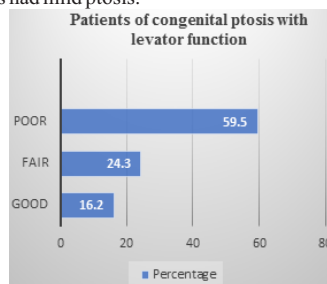


Figure 2: Levator function of Congenital ptosis patients

From Figure 2, it was revealed that 59.5% (22) of patients had poor levator function while 24.3% (09) patients had fair levator function. The good levator function was seen in only 16.2% (06) of patients.

DISCUSSION

Embryologically, most of the connective tissue of the upper lid is derived from mesenchyme. The orbital septum is derived from the mesenchyme of the second arch.¹ Suborbicularis fibro adipose tissue consists of multiple fibrous septa that merge posteriorly with the orbital septum and give orbital septum a multilayered quality, augmenting the contour of the superior sulcus.² Congenital ptosis is thought to be the result of developmental dystrophy of the levator muscle. Normal muscle fibres are replaced by fibrous connective tissue without contractile properties. Ptosis is more marked in an up gaze and the upper lid is relatively retracted in a downgaze.³

Correction of ptosis in adults and children is done for both functional and cosmetic purposes but early intervention in children with ptosis is essential to prevent amblyopia. Levator function and severity of ptosis determine the selection of surgical technique. Frontalis suspension surgery has been considered as a treatment of choice for correcting congenital ptosis with poor levator function.^{4,5}

In our study, 54.1% of patients had severe ptosis. 29.7% of patients had moderate ptosis. Only 16.2% of patients had mild ptosis. Also, the study revealed that 59.5% of patients had poor levator function. 24.3% of patients had fair levator function while only 16.2% of patients had good levator function. A study was conducted by **Prabha P et al**⁶ on 123 cases. Children with congenital ptosis presenting at less than 5yrs of age constituted 8.1%. In the study 71.54% of cases were unilateral. Severe ptosis (degree of ptosis 4mm and more) was present in 90.24% of patients. The function of Levator palpebrae superioris was poor in 73.17% of patients. Another study conducted by **Lee V et al**⁷ revealed similar results. The severity of the ptosis was recorded in 337 patients. Forty-four (13%) patients had mild ptosis, 191 (57%) had moderate ptosis, and 102 (30%) had severe ptosis. The levator function was recorded in 324 patients—122 (38%) patients had levator function of greater than 8 mm, 127 (39%) had moderate (4–8 mm), and 75 (23%) had poor. Another study conducted by **Raina Elsawwy et al**⁸ revealed similar results. The congenital ptosis patients usually have severe ptosis with poor levator function because of the dystrophic levator palpebrae superioris which fails to perform its normal function.

CONCLUSION

Within the limitation of this study, The majority of congenital ptosis patients have a severe type of ptosis with poor levator function. we concluded that the knowledge of the severity of ptosis and levator function is very crucial in deciding the type of surgical procedure that needs to be done in the ptosis patients. The choice of the surgical technique adopted depends on the experience of the surgeon but mainly on preoperative considerations. The grade of ptosis, the levator eyelid function, and the risk of amblyopia are the parameters that will guide the timing and the choice of the surgical technique.

REFERENCES

1. Bremond-Gignac DS, Deplus S, Cussenot O. Anatomic study of the orbital septum. *Surg Radiol Anat.* 1994; 16: 121-4
2. Mustard JC. Correction of ptosis by split level lid resection. *Clin Plas Surg.* 1978; 5: 533-5.
3. Meyer DR, Lindberg JV, Wobig JL. Anatomy of the orbital septum and associated eyelid connective tissues. Implications for ptosis surgery. *Ophthalm Plast Reconstr Surg.* 1991; 7: 104-13.
4. Beard C. The surgical treatment of blepharoptosis: a quantitative approach. *Trans Am Ophthalmol Soc* 1966; 64:401–87.
5. Crawford JS. Repair of ptosis using frontalis muscle and fascia lata: a 20-year review. *Ophthalmic Surg* 1977; 8:31–40.
6. Padma Prabha, M. Padma. Congenital ptosis - A clinical and demographic study in a tertiary eye care hospital. *International Journal of Ocular Oncology and Oculoplasty*, October-December, 2018;4(4):155-158.
7. Lee V, Konrad H, Bunce C, Nelson C, JRO Collin. Aetiology and surgical treatment of childhood blepharoptosis. *Br J Ophthalmol* 2002; 86:1282–1286.
8. Rania El Essawy, Mohamed A. Elsadat, Clinical and demographic characteristics of ptosis in children: a national tertiary hospital study. *Eur J Ophthalmol.* 2013;23(3):356-360